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EXAMINER				
CHUO, TONY SHENG HSIANG				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/790,627

Applicant(s)

MATHIOWETZ ET AL.

Examiner

Tony Chuo

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 24-35 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-11 and 24-35 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date 10/31/08
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Claims 1-11 and 24-35 are currently pending. The amended claims do not overcome the previously stated 102 and 103 rejections. Therefore, upon further consideration, claims 1-11 and 24-35 stand rejected under the following 102 and 103 rejections.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 10/31/08 was filed after the mailing date of the non-final rejection on 8/13/08. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Ura et al (WO 01/080331) using (US 2003/0017383) as an equivalent English translation.

The Ura reference discloses a temperature regulated, enclosed battery comprising: an electrical energy storage cell "2"; a heat dissipating portion "4a" (first layer) formed of a material exhibiting excellent thermal conductivity that is shaped to conform to a cylindrical portion of an outer surface of the cell, wherein the heat dissipating portion terminates at first layer ends that are on the cylindrical portion of the outer surface of the cell and has a thickness of approximately 0.3 mm; and a resin made pack case "1" (second layer) that is shaped to form an enclosure of an outer surface of the first layer and that extends beyond the outer surface to enclose the first layer ends and that exhibits poor thermal conductivity (See Figure 1 and 2 and paragraphs [0025]). It also discloses a heat dissipating portion that are made of aluminum or copper (See paragraph [0022]). It also discloses a battery pack that has a maximum temperature of the cells that is 43°C (See paragraphs [0034],[0036]).

Examiner's note: It is inherent that the first and second layers have known thermal conductivities values because the materials are known. The limitation "a combustible atmosphere temperature classification that specifies an outer surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery that has an aluminum heat dissipating portion and resin made case because if the Ura temperature regulated, enclosed battery was tested during a short circuit condition of the battery, it would inherently have a temperature classification that specifies an outer surface temperature. It is also inherent that when the battery produces heat at a hot spot during short circuit, the first layer would spread the flow of heat over a portion of the outer surface of the first layer

that is larger than the hot spot and the second layer of material would retard the flow of heat to an outer surface of the second layer. It is also inherent that a cover consisting of a first layer that is a aluminum or copper layer exhibiting excellent thermal conductivity and a second layer that is a resin case exhibiting poor thermal conductivity would retard the flow of heat to an outer surface such that the temperature of the outer surface of the resin case has a measured maximum temperature of 130 degrees centigrade or less during a short circuit condition. In addition, the limitation "controlling the outer surface temperature of the combined enclosure and electrical energy storage cell such that the temperature regulated, enclosed electrical energy storage cell comprises intrinsically safe equipment" is construed as being implicitly taught by Ura et al. Ura et al discloses a battery that suppresses a rise in temperature of a cell due to heat generation and is enclosed in a resin case. It is well known in the art that a short circuit results in a rise in temperature of a cell due to heat generation which creates safety problems for the battery. The Ura battery solves this problem by safely suppressing the temperature rise and enclosing the battery inside a resin case, thereby providing a battery that is intrinsically safe.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ura et al (WO 01/080331) using (US 2003/0017383) as an equivalent English translation, in view of Toyoda (JP 2001-243927). The Ura reference is applied to claim 1 for reasons stated above.

However, Ura et al does not expressly teach a second layer of material that is heat-shrink tubing or an elastic material. The Toyoda reference discloses a heat shrink member "8" that covers a battery (See paragraph [0008]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ura battery cover to include a second layer of material that comprises heat-shrink tubing or elastic material in order to improve the reliability of the outer package of the battery while simplifying the manufacture of the battery.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ura et al (WO 01/080331) using (US 2003/0017383) as an equivalent English translation, in view of Koehler et al (EP 0177225). The Ura reference is applied to claim 1 for reasons stated above.

However, Ura et al does not expressly teach a first layer that comprises two thermally conductive half-shells that each cover one side of a round surface of the energy storage cell. The Koehler reference discloses a cooling system for batteries that comprises cooling panels "15" & "16" that form thermally conductive half shells that each cover one side of a round surface of the energy storage cell (See Figure 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Ura battery cover to include a first layer that comprises two thermally conductive half-shells that each cover one side of a round surface of the energy storage cell in order to increase the surface area of the heat dissipating portion that contacts the energy storage cells such that the thermal efficiency of the heat dissipating portion is increased.

8. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194).

The Stafford reference discloses a battery comprising: a plurality of battery cells "22", wherein each cell is covered by a first heat-conductor layer "42" that is shaped to conform to a cylindrical portion of an outer surface of the battery that terminates at first layer ends that are on the cylindrical portion of the outer surface of the battery cell and a second structural support outer layer "48" that is shaped to conform to an outer surface of the first heat-conductor layer, wherein the first layer enclosed by the second layer to form a plurality of enclosed cells (See column 3 line 67 to column 4 line 2 and column 4 line 56 to column 5 line 24, and Figures 1, 3, & 5). It also discloses electrical contacts "34" (See column 4, lines 9-10).

Examiner's note: The first layer ends are construed as being the portions of the first heat conductor layer that form the interface between the two half-shells. The limitation "a combustible atmosphere temperature classification that specifies an outer surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery cover comprising a first layer that

has a first thickness and high thermal conductivity and a second layer that has a second thickness and poor thermal conductivity.

However, Stafford et al does not expressly teach a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device. The Miller reference discloses a multicell battery comprising: a plurality of electrical energy storage cells "24" & "26"; a protective device including a fusible link "64" and electrical interconnections "50" that interconnect the plurality of electrical energy storage cells in series circuit with the protective device and the electrical connection leads; and a plastic resin shell "22" shaped to receive the plurality of covered cells and the protective device (See Figure 1 and 3 and column 3, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford battery pack to include a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device in order to provide an overcurrent protection device and outer case that are easily and economically constructed.

Examiner's note: It is inherent that the combination of the first and second layers and the protective device would render the battery intrinsically safe because

combination of a battery cell with good heat removal properties and a protective device including a fusible link would necessarily form a battery that is intrinsically safe.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194) as applied to claims 9 and 10 above, and further in view of Maggert et al (US 6724170).

However, Stafford et al as modified by Miller et al does not expressly teach a plastic resin shell that includes plastic resin separation bars positioned between the cells and the electrical interconnections to reduce shorting. The Maggert reference discloses a plastic casing "202" positioned between the cells and the electrical interconnections to prevent tabs from shorting (See column 3 line 66 to column 4 line 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Miller battery pack to include separation bars in the plastic resin shell in order to prevent the tabs from shorting to either tabs or other cell housings.

10. Claims 24-27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194), and further in view of Pajakowski et al (US 6718425).

The Stafford reference discloses a battery comprising: a plurality of nickel hydrogen battery cells "22" that are rechargeable cells, wherein each cell is covered by a first heat-conductor layer "42" that is shaped to conform to a cylindrical portion of an outer surface of the battery that terminates at first layer ends that are on the cylindrical portion of the outer surface of the battery cell and a second structural support outer

layer "48" that is shaped to conform to and completely covers the outer surface of the first heat-conductor layer (See column 3 line 65 to column 4 line 2 and column 4 line 56 to column 5 line 24, and Figures 1, 3, & 5). It also discloses electrical contacts "34" (See column 4, lines 9-10).

Examiner's note: The first layer ends are construed as being the portions of the first heat conductor layer that form the interface between the two half-shells. The limitation "a combustible atmosphere temperature classification that specifies an outer surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery cover comprising a first layer that has a first thickness and high thermal conductivity and a second layer that has a second thickness and poor thermal conductivity.

However, Stafford et al does not expressly teach a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device. The Miller reference discloses a multicell battery comprising: a plurality of electrical energy storage cells "24" & "26"; a protective device including a fusible link "64" and electrical interconnections "50" that interconnect the plurality of electrical energy storage cells in series circuit with the protective device and the electrical connection leads; and a plastic resin shell "22" shaped to receive the plurality of covered cells and the protective device (See Figure 1 and 3 and column 3, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford battery pack to include a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device in order to provide an overcurrent protection device and outer case that are easily and economically constructed.

However, Stafford et al as modified by Miller et al does not expressly teach an apparatus comprising a data acquisition unit, wherein the apparatus is portable and handheld. The Pajakowski reference discloses a data system (data acquisition unit) for collecting, displaying, and analyzing data that is portable and handheld and is powered by a battery power supply (See Abstract).

Therefore, one skill in the art could have combined the Stafford/Miller battery pack and the Pajakowski data system by known methods with no change to their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention.

Examiner's note: It is inherent that the apparatus is intrinsically safe because the combination of a data acquisition unit and a battery cell that has inherent safety features would necessarily result in an apparatus that is intrinsically safe.

11. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194) and Pajakowski et al (US

6718425) as applied to claim 24 above, and further in view of Iwasaki et al (US 6325611).

However, Stafford et al as modified by Miller et al and Pajakowski et al does not expressly teach a short circuit that is external to the battery. The Iwasaki reference discloses an external short circuiting test that forms a hot spot on the cell near the lead member by heat generation due to the resistance of the lead member (See column 7, lines 13-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Miller/Pajakowski apparatus to include a short circuit that is external to the battery in order to confirm that the battery can maintain high safety even under the application of an extraordinarily high charge voltage.

12. Claims 30-33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194), and further in view of Kosh (US 2003/0046974).

The Stafford reference discloses a battery comprising: a plurality of nickel hydrogen battery cells "22" that are rechargeable cells, wherein each cell is covered by a first heat-conductor layer "42" that is shaped to conform to a cylindrical portion of an outer surface of the battery that terminates at first layer ends that are on the cylindrical portion of the outer surface of the battery cell and a second structural support outer layer "48" that is shaped to conform to and completely covers the outer surface of the first heat-conductor layer (See column 3 line 65 to column 4 line 2 and column 4 line 56

to column 5 line 24, and Figures 1, 3, & 5). It also discloses electrical contacts "34" (See column 4, lines 9-10).

Examiner's note: The first layer ends are construed as being the portions of the first heat conductor layer that form the interface between the two half-shells. The limitation "a combustible atmosphere temperature classification that specifies an outer surface temperature during a short circuit of the electrical energy storage cell" is construed as being an inherent property of a battery cover comprising a first layer that has a first thickness and high thermal conductivity and a second layer that has a second thickness and poor thermal conductivity.

However, Stafford et al does not expressly teach a protective device including a fusible link; electrical interconnections that interconnect the plurality of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device. The Miller reference discloses a multicell battery comprising: a plurality of electrical energy storage cells "24" & "26"; a protective device including a fusible link "64" and electrical interconnections "50" that interconnect the plurality of electrical energy storage cells in series circuit with the protective device and the electrical connection leads; and a plastic resin shell "22" shaped to receive the plurality of covered cells and the protective device (See Figure 1 and 3 and column 3, lines 39-41).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford battery pack to include a protective device including a fusible link; electrical interconnections that interconnect the plurality

of battery cells in a series circuit with the protective device and the electrical contacts; and a plastic resin shell shaped to receive the plurality of covered cells and the protective device in order to provide an overcurrent protection device and outer case that are easily and economically constructed.

However, Stafford et al as modified by Miller et al does not expressly teach an apparatus comprising a calibrator, wherein the apparatus is portable and handheld. The Kosh reference discloses a handheld calibration module "12" and a battery located in the handheld module (See paragraphs [0016],[0018]).

Therefore, one skill in the art could have combined the Stafford/Miller battery pack and the Kosh calibrator by known methods with no change to their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention.

Examiner's note: It is inherent that the apparatus is intrinsically safe because the combination of a calibrator and a battery cell that has inherent safety features would necessarily result in an apparatus that is intrinsically safe.

13. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stafford et al (US 5763118) in view of Miller et al (US 5204194) and Kosh (US 2003/0046974) as applied to claim 30 above, and further in view of Iwasaki et al (US 6325611).

However, Stafford et al as modified by Miller et al and Kosh does not expressly teach a short circuit that is external to the battery. The Iwasaki reference discloses an external short circuiting test that forms a hot spot on the cell near the lead member by heat generation due to the resistance of the lead member (See column 7, lines 13-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Stafford/Miller/Kosh apparatus to include a short circuit that is external to the battery in order to confirm that the battery can maintain high safety even under the application of an extraordinarily high charge voltage.

Response to Arguments

14. Applicant's arguments filed 10/31/08 have been fully considered but they are not persuasive.

The applicant argues that Ura et al. does not disclose a temperature regulated, enclosed electrical storage cell that comprises intrinsically safe equipment as presently claimed in amended Claim 1. Ura et al. does not disclose meeting the approval standard for intrinsically safe equipment in a temperature regulated, enclosed electrical energy storage cell as presently claimed in amended Claim 1. Ura et al. does not disclose specific creepage distances, which are part of the intrinsically safe equipment standard. Ura et al. does not disclose specific clearance distances which are part of the intrinsically safe equipment standard. Ura et al. does not disclose the numerous other requirements of the intrinsically safe equipment standard.

Firstly, the examiner maintains the contention that the phrase "intrinsically safe" recited in the claims does not necessarily define any kind of standard and that the Ura battery is inherently intrinsically safe because it suppresses a rise in temperature of the cell due to heat generation and encloses the battery in a resin case which retards heat flow to the outer surface of the battery. Secondly, the only description in the

specification of the present application of a battery that is intrinsically safe is a battery that is tested during short circuiting such that no spot on the battery surface can exceed the limit of the classification. Therefore, the only property that is measured is the temperature of the outer surface of battery. There is no evidence to show that the Ura battery would not pass this short circuiting test. Thirdly, the characteristics such as specific creepage distances, specific clearance distances, and other requirements of an intrinsically safe equipment are not disclosed in the specification of present application or recited in the claims. Therefore, this argument is not commensurate with the scope of the claims.

The applicant further argues that Ura et al does not disclose a second layer of thermally insulating material that is shaped to form an enclosure of the outer surface of the first layer and that extends beyond the outer surface to enclose the first layer ends as presently claimed in claim 1. The examiner disagrees because Figure 2 and 3 of Ura et al show a resin case "1" that is shaped to form an enclosure of the outer surface of the first layer "4a" and extends beyond the outer surface to enclose the first layer ends of cells "2".

The applicant further argues that neither Stafford et al nor Miller et al, taken singly or in combination, teach or suggest a battery that is intrinsically safe as presently claimed in Claim 9. In response, the same arguments stated above for the Ura reference is also applicable to the Stafford/Miller battery.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Chuo whose telephone number is (571)272-0717. The examiner can normally be reached on M-F, 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC

/Jonathan Crepeau/
Primary Examiner, Art Unit 1795